

**Applicant: Daniel J. Pusiol**  
**Application No.: 10/713,344**

**REMARKS**

After the foregoing amendment, claims 1 – 95 are pending. Claims 17 – 94 were previously withdrawn from consideration. Claims 1 – 16 are amended as to matters of form. Claim 95 is added. Support for the amendments can be found in the original claims and at paragraph 20 of the originally filed application.

**Examiner Interview**

The Examiner and the undersigned Applicant's representative discussed the current office action via telephone. The discussions included 1) the references requested in the office action, and 2) the requested indication of a patentable distinction between the claims and the references requested. On July 28, 2008, the Examiner called to discuss these matters.

- 1) The references requested are references cited in a paper ("NQR") authored by one of the inventors but published in 2007, which is after the 2003 priority date of this application. The requested references are number "31" and "34" in NQR.

The Examiner and Applicant's representative noted that reference 34 is not prior art. The Examiner indicated that she would try to locate this reference and Applicant did not need to provide it. With respect to reference 31, Applicant's representative stated that it would be provided as soon as it is obtained. However, after a diligent search, the reference cannot be located at this time. Applicant has

not studied this reference in light of the claims and makes no representation regarding the same by way of this reply.

2) Applicant's representative pointed out that Applicant is not required to indicate a patentable distinction between a reference and the claims absent a rejection. The Examiner indicated the Applicant is not required to include this information in its reply.

**Claim Objections**

The Action objects to claims 1, 2, 11 and 12 because the words "digitilizing" and "digitilization" should be changed to "digitizing". In response, Applicant amended claims 1, 2, 11 and 12. Applicant requests withdrawal of the objection to these claims.

The Action objects to claims 1-16 stating the body of the claims should be rewritten using ing-forms of verbs. Applicant amended the claims to recite "ing" and with respect to accompanying matters of form. Applicant requests withdrawal of this objection of the claims.

The Action objects to claims 3-8 as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant cancelled claims 3-8 without prejudice. This objection is moot.

**Claim Rejections - 35 USC §112**

The Action rejects claims 1-16 under 35 U.S.C. 112, second paragraph, as indefinite. Applicant made obviating amendments. The amendments address each of the comments made regarding claims 1-16.

With respect to claim 1 and “spins A nuclei group” and “spins B nuclei group,” the Action states “[i]t is not quite clear, as to what is meant by this definition. Is this a group of nuclei A (B) possessing identical spins? For example, such nuclei as  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$ , etc. have the same spin  $\frac{1}{2} \dots .$ ”

Claim 1 is amended to recite “group of nuclei with spins A” and “group of nuclei with spins B.” As described at paragraphs 7-11 of the originally filed specification, spins A are those for which quadrupolar resonance is observed. For the quadrupolar resonance to take place, the group of nuclei with spins A must have a spin greater than  $\frac{1}{2}$  ( $I>1/2$ ). On the other hand, spins B “couple” via magnetic dipolar coupling to spins A. Coupling produces a shortening in the spin-spin relaxation time of spins A, and hence a degradation of the quadrupolar resonance signal coming from said spins A.

Fluctuating spins B reduces coupling and increases the signal-to-noise ratio that spins A emit. The fluctuation is achieved by a pulsed magnetic field, and a second radiofrequency field (which may be pulsed or not), both of which are tuned to

the magnetic resonance condition (Larmor equation) of spins B. The effect of introducing the pulsed magnetic field and the second radiofrequency field is to make spins B generate flip-flop magnetic transitions for averaging the dipolar field induced by spins B to spins A. To respond in this fashion, spins B must be able to comply with such resonance condition.

Applicant believes that claim 1, as amended, sufficiently recites the difference between groups of nuclei with spins A versus spins B: “said compound bearing a group of nuclei with spins A capable of exhibiting a quadrupolar resonance; and a group of nuclei with spins B capable of exhibiting a magnetic resonance... .” And given the written description, the skilled artisan would understand how spins A differ from spins B.

With respect to claim 11, the Action states that “it is not clear, as to how ‘application of a process of resonance excitation and off resonance detection (TONROF)’ recited in the preamble of the claim differs from the method recited in claim 1.” Further, the Action states that the transition “consisting” is improper. Claim 11, as amended, recites the “method according to claim 1, wherein said signal ... is obtained by means of ... TONROF, the method *comprising*... .” The body of the claim recites limitations related to TONROF, which are in addition to the limitations recited in claim 1. Applicant respectfully submits that claim 11 makes

clear how application of TONROF differs from the method recited in claim 1 and the open ended transition “comprising” is proper.

Applicant believes that the rejections are overcome and respectfully requests withdrawal of the 35 U.S.C. 112, second paragraph rejections.

**Potential Rejections**

The Action states that the claims “can be potentially be rejected over ... ‘NQR: From imaging to explosives and drugs detection’ (Physica B, 2007)” (referred to herein after as “NQR”) Applicant submits that NQR is not prior art and cannot be cited against the claims.

The Action also cites the article listed as “*Cerioni, D.J. Pusiol, Hyperfine Interactions* 159 (2005),” which is cited in NQR. Applicant submits that this reference also is not prior art and cannot be cited against the claims.

Finally, the Action cites “S.S. Kim, J.R.P. Jayakody, R.A. Marino, Z. Naturf. 47a (1992),” which is also cited in NQR. Applicant will provide this article in an Information Disclosure Statement.

The Action requests Applicant to point out the patentable distinction of the claims over the references cited in the Action. Applicant respectfully submits that none of the rules within the MPEP, patent rules, or patent statute requires an applicant to respond to a potential rejection. Nor do the rules require an applicant to point out the patentability of a claim in light of references that are not cited as

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the basis of a rejection. Applicant has not studied the substance of these references in light of the claims. Applicant makes no representation of such an study or its conclusions by say of this reply. Applicant respectfully declines to provide this information but thanks the Examiner for the attention given to this application.

Applicant respectfully requests withdrawal of the potential rejections.

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**Conclusion**

If the Examiner believes that any additional matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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